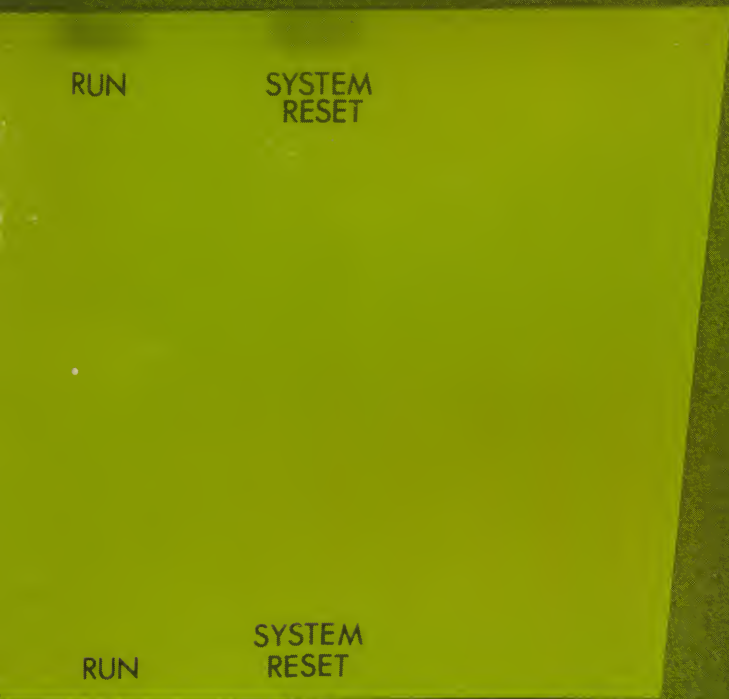


# DATA 620-I



**DATA MACHINES**  
Division of DECISION Control, Inc.

# DATA/620•I

## INTRODUCTION

DATA/620I, shown in actual size on the cover, is a system oriented digital computer. It occupies only 10½" of a 19" x 24" relay rack, weighs less than 100 lbs., and requires only 350 watts. Developed for operation with other electronic devices performing information and control functions automatically. Features integrated circuit high reliability, interfacing ease, I/O balanced with processing power, over 100 commands, and hardware registers for arithmetic and addressing speed. Fully supported with field proven existing software, programming and maintenance training, peripheral equipment, and interfacing hardware.

DATA/620I is modular in concept to economically match the tasks to be performed. The Processor can be supplied with memories ranging from 1024 to 32,768 words of 16 or 18 bits. A single small task to be performed automatically easily justifies the low cost of the DATA/620I, although numerous large tasks won't saturate the processing and throughput power. Uncomplicated and trustworthy enough to be put into a system and be forgotten. Flexible and economic enough to replace special purpose electronic control systems. Safe enough to let very expensive processes depend on DATA/620I performance.

DATA/620I is an emphasis of cost cutting techniques to produce an "end" solution at the lowest possible cost. 620I prices are low, interfacing costs are low, service costs negligible. All DATA/620 field proven software operates on DATA/620I, making the solution programming easy and economical. Complementary I/O peripheral devices are attractively priced. The pricing offers new opportunities of cost savings and solution approaches to the system designer, product planner, development engineer and, most of all, to the end USER.

## FEATURES

SILICON MONOLITHIC INTEGRATED CIRCUITS  
NINE HARDWARE REGISTERS  
107 BASIC COMMANDS  
SIX ADDRESSING MODES  
DIRECT ADDRESSING TO 2048 OR 32,768  
16 OR 18 BIT WORDS  
EXPANSION TO 32,768 WORDS  
HARDWARE INDEX REGISTERS  
PARTY LINE I/O FACILITY  
MICRO-EXEC OPTION  
10½" OF RACK SPACE  
LESS THAN 90 LBS.  
340 WATTS  
NPN AND PNP I/O LEVELS  
PLUG-IN EXPANDABLE  
FIELD PROVEN SOFTWARE  
COMPATIBLE WITH DATA 620  
PORTABLE

### TYPICAL PRICES!

|                                  |          |
|----------------------------------|----------|
| DATA/620I processor . . . . .    | \$ 6,000 |
| 4096 x 16 bit memory . . . . .   | \$ 6,500 |
| 16,768 x 16 bit memory . . . . . | \$23,000 |
| ASR 33 TTY . . . . .             | \$ 1,400 |





## SPECIFICATIONS

**TYPE** A system Computer, general purpose digital, designed for on-line data systems, magnetic core memory, binary, parallel, single-address, with bus organization and micro-control.

**MEMORY** Magnetic Core, 16 or 18 bits, 1.8 microseconds full cycle, 700 nanoseconds access time, 1024 words minimum expandable to 32,768 words. Each module with data and address register.

**ARITHMETIC** Parallel, binary, fixed point, 2's complement.

**WORD LENGTH** 16 or 18 bits.  
**SPEED (FETCH & EXECUTE)** Add or Subtract 3.6 microseconds  
 Multiply (optional) 18.0 microseconds, 16 bit  
 19.8 microseconds, 18 bit  
 Divide (optional) 18.0 to 25 microseconds, 16 bit  
 19.8 to 28.8 microseconds, 18 bit  
 Register change class 1.8 microseconds  
 Input/Output—  
 from A or B 3.6 microseconds  
 from memory 5.4 microseconds

**CONTROL** **ADDRESSING MODES**  
 Direct addressing to 2048 words  
 Relative to P register 512 words  
 Index with X-register, hardware, does not add to execution time  
 Index with B-register, hardware, does not add to execution time  
 Multi-level indirect addressing  
 Immediate  
 Extended addressing (optional)

**INSTRUCTION TYPES**  
 Single word Generic  
 Double word Micro-command

**INSTRUCTIONS:** 107 standard, and over 128 macro instructions.

| Number | Type                           | Time/Cycles |
|--------|--------------------------------|-------------|
| 3      | Load                           | 2           |
| 3      | Store                          | 2           |
| 5      | Arithmetic (2 optional)        | Above       |
| 3      | Logical                        | 2           |
| 10     | Jump                           | 2           |
| 10     | Jump and Mark                  | 2-3         |
| 10     | Execute                        | 2           |
| 14     | Immediate (2 optional)         | 2           |
| 13     | Input/Output                   | 1,2,3       |
| 26     | Register Change                | 1           |
| 6      | Logical Shift                  | 1 + .25K    |
| 6      | Arithmetic Shift               | 1 + .25K    |
| 2      | Control                        | 1           |
| 14     | Extended addressing (optional) | 3           |
|        | Over 128 micro-instructions    |             |

**MICRO-EXEC (Optional)**  
 Facility and hardware to construct a hardware program external to the DATA 620 I. Eliminates stored program memory accessing by use of hardware program.

**OPERATION  
REGISTERS**

**BUFFER  
REGISTERS**

**INPUT/OUTPUT**

**PHYSICAL**

**MAINFRAME  
LOGIC AND  
SIGNALS**

**Console**  
 Display and data entry switches for all operational registers, 3 sense switches, instruction repeat, single step; run; power on/off.

A-register—accumulator, input/output, 16/18 bits.  
 B-register—double length accumulator, input/output, index register, 16/18 bits.  
 X-register—index register, 16/18 bits.  
 P-register—program counter, 16/18 bits.  
 R-register—operand register, 16/18 bits.  
 U-register—instruction register, 16/16 bits.  
 S-register—shift register, 5 bits, operates with the U-register for executing shift instructions.  
 L-register—memory address register, one L-register per memory module.  
 W-register—memory word register, 16/18 bits, one W-register per memory module.

**Processor Input/Output Options**  
**Programmed Data Transfer**  
 Single word to/from memory  
 Single word to/from A and B registers  
 External control lines  
 External sense lines  
**Automatic Data Transfer**  
 Direct memory access facility transfer with rates over 200,000 words per second.  
**Priority Interrupts**  
 Group enable/disable, individually arm/disarm, single instruction interrupt capability.  
**Real-Time Clock**  
 Adjustable time base: May be programmed as multiple internal timers.  
**Power Failure detect/restart**  
 Interrupts on power failure and automatically restarts on power recovery.

**DIMENSIONS**  
 Main Frame (18 bits)—10½ inches high, 19 inches wide, 15 inches deep

**WEIGHT**  
 Main Frame 50 pounds

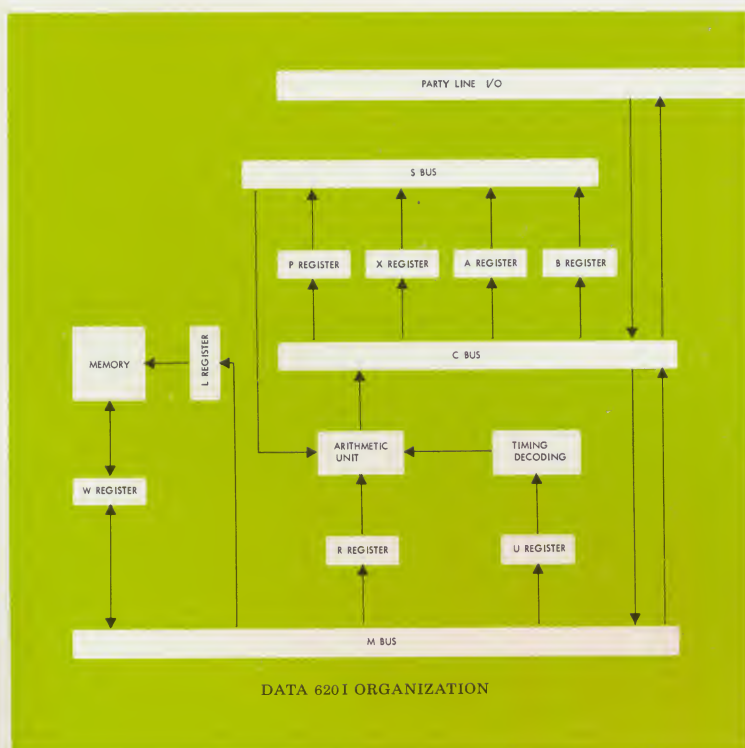
**POWER**  
 3 amps 115vac, 60hz (340 watts). 115 ± 10v, 60 ± 2hz.  
 Power supplies are regulated. Additional regulation is not required under normal commercial power sources.

**EXPANSION**  
 Main processor contains provisions and space for all internal options.

**INSTALLATION**  
 Mounts in standard 19 inch cabinet, no air conditioning, sub-flooring or special wiring and site preparation required.

**ENVIRONMENTS**  
 0°C to 45°C; 0 to 90% relative humidity.

Integrated circuit, 2.2 mhz clock, logic levels 0v false, +5 true.



## SYSTEM SOFTWARE

The programming aids provided with the DATA/620I family were designed and developed with the principal objectives of maximizing user productivity and efficiency. These languages have been field-proven on the DATA/620 Computer. The programming languages and library subroutines conform to the most widely used standards and conventions. The software is modular in design such that user-oriented macros, pseudo operations, compiler statements, special hardware test routines and Input/Output drivers can be easily added. The documentation delivered with the system describes the construction and operation and contains a separate treatise describing how the user can add to or select a set of the standard software to enhance the effectiveness of the software for his particular application and system configuration. The major items of DATA/620I software are listed below.

|                    |                |
|--------------------|----------------|
| FORTRAN            | LOGARITHMIC    |
| DAS ASSEMBLER      | EXPONENTIAL    |
| AID                | TRIGONOMETRIC  |
| ON-LINE AID        | CONVERSIONS    |
| FLOATING POINT     | I/O DRIVERS    |
| MULTIPLE PRECISION | MAINTAIN EXEC. |
| CORRECT            | VERIFY         |

## PERIPHERAL EQUIPMENT

**MAGNETIC TAPE TRANSPORTS** — low speed 45 ips, medium speed 75 ips, high speed 120 ips. IBM standard formats with densities of 200, 556 or 800 bpi.

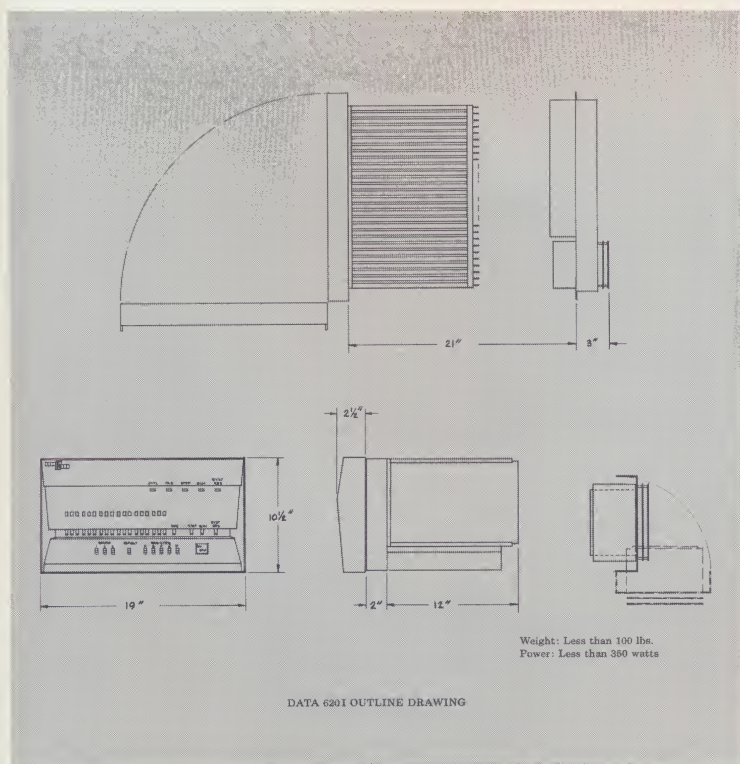
**CARD EQUIPMENT** — 85 cpm reader, 1,000 cpm reader, 100 cpm punch.

**PRINTERS** — High speed 1200 lpm, 12 columns; high speed 600 lpm, 120 columns; medium speed 300 lpm, 120 columns; low speed 10 cps KSR 33, KSR 35.

**PAPER TAPE EQUIPMENT** — Readers available in 300 cps or 10 cps, punches 60 cps, 120 cps or 10 cps.

**MAGNETIC STORAGE DEVICE** — Fixed head storage discs available in 65 K to 1/4 million words of storage. Average access time, 8.5 ms.

**MISCELLANEOUS:** Digital Plotters, Oscilloscope Display, Analog Input and Output, High and Low Level Assemblies, Data Set Couplers, Contact and Solid State Digital Units.





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DUREL advertising

DATA / 6201



OVF'L

PARITY

STEP

RESET

STEP

SENSE

2

3

REPEAT

REGISTER

A

B

X

U

P



# Introducing

## the DATA 620-I new systems computer

The DATA/620-I integrated circuit computer is the newest member of the DATA/620 family of system computers. DATA/620-I fills the gap between general purpose and special purpose computers. It belongs in a system, and solves problems previously considered too difficult or expensive for computer solution.

Designed for faster problem solution the DATA/620-I has a bigger instruction set, integrated circuit reliability, is smaller, has one-half the components, and costs less than any computer in its class.

DATA/620-I comes complete with software, field-proven and refined on the DATA/620.

Extremely compact, the DATA/620-I requires only 10" of 19" rack space. It's available with memory modules from 1024 to 32,768 words of 16 or 18 bits, and with a selection of control, arithmetic and I/O facilities, including D.M.I.'s unique Micro-Exec.

Price: \$13,900 with 4096 words of 16 bit memory, including ASR 33 teletype.

We are very proud of our new DATA/620-I, and would like to tell you more in a fact filled brochure. Please write for one.



### DATA MACHINES

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The Data 620-I and the Data/620 will be on display at booths H8-H10 at the SJCC. Stop by and discuss your digital system requirements with a Data Machines applications engineer.